Promoting dialogue about reforms in mathematics education at the post-secondary level

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Northwest Indian College (NWIC) is a Tribal college chartered by the Lummi Nation. The college mission statement is: "Through education, Northwest Indian College promotes Indigenous self-determination and knowledge." In 2017, NWIC has physical locations in six Native Nations in the Northwest United States. On average, about 80% of the students are people who are enrolled in federally-recognized tribes, mostly from Washington State, but also from Alaska, the Southwestern US, and Canada. The main campus, where I am based, is located in the Lummi Nation, in northwestern Washington State. Over the course of the past five years, the average number of students who have been enrolled in classes at the Lummi campus each quarter has been around 300. Over 70% place into pre-college math.

For the past six years, I have been part of a collective journey to completely reconstruct what mathematics is taught, how it is taught, and how students are assessed. I received great guidance from some wise, experienced Math educators, and was able to contribute to the progress in large part due to the intensely collaborative relationship among my colleagues, the small size of our classrooms, and the flexibility afforded by working at a small institution.

From several conversations with faculty from other institutions (several Community Colleges around Washington, as well as WWU instructors), my own experience being a TA at WWU, as well as a prominent document from the national professional mathematics organizations[1], I knew that the work that we have been doing could offer some potentially useful components to a necessary, larger conversation about the way in which mathematics is taught, particularly at the introductory level. I thought that the Community Engagement Fellows Program might lead to some opportunities to insert our work into that conversation.

I shared with my cohort one of the activities that we engage the students in at the beginning of each quarter[2]. The enthusiastic reaction of the other fellows (from a variety of disciplines, most of them not in the sciences) reassured me about the basic soundness of our approach, and also encouraged me to seek out opportunities to share our work with an audience.

Travis suggested that we connect with Ed Geary at the Science, Mathematics and Technology Education program at WWU, and our email conversations led to a small group of us from NWIC giving a presentation at the annual Slesnick Symposium at WWU. I was pleased to see that several folks from WWU and WCC were in

[1] A Common Vision for Undergraduate Mathematical Sciences Programs in 2025, by Karen Saxe and Linda Brady, published and distributed by the Mathematical Association of America.
In the executive Summary, the authors begin with a review of the curriculum guides published by the American Mathematical Association of Two-Year College, the American Mathematical Society, the American Statistical Association, the Mathematical Association of America, and the Society for Industrial and Applied Mathematics, and they conclude, in bold font and centered, that **the status quo is unacceptable.**

[2] A version of this activity can be viewed here https://www.youcubed.org/jo-dot-card-number-talk/
Jo Boaler is a prominent Stanford-based Mathematics educator.

attendance and we were able to have some good conversations afterwards. Several other fellows suggested further avenues for moving the conversation forward, and I felt very encouraged by those suggestions.

My initial goal was to engage both the faculty who teach comparable introductory mathematics classes and the students who are perhaps least served by the currently wide-spread approach. I haven't established those connections yet, and being part of the Fellows helped reassure me that developing those relationships will be a long process, and that there is just part of the natural order of things. I am walking away from my participation in the Fellows program this year with some more ideas about how to make such a conversation happen, and the prospect of being able to build connections that will make the attempt worthwhile.